MIDAIR COLLISION AVOIDANCE GUIDE

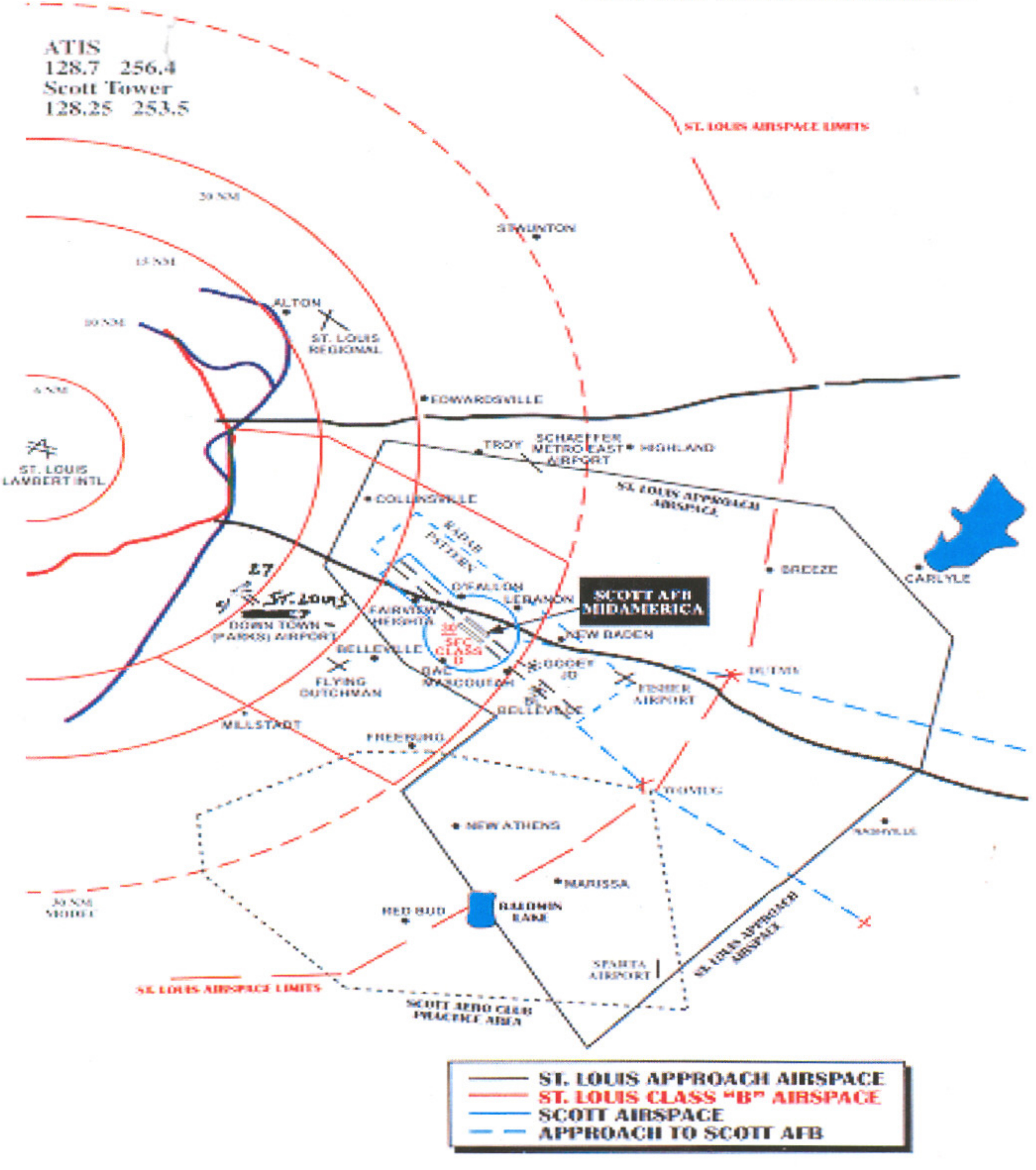
375th Airlift Wing

Scott AFB, IL 62225-5000

POC: 375 AW/SEF

MIDAIR COLLISION AVOIDANCE FOR THE SCOTT AFB/MIDAMERICA AREA

- NOT FOR NAVIGATIONAL USE -



INTRODUCTION

Midair Collision Avoidance (MACA) is a subject that is deservedly gaining heightened awareness among both civilian and military aviation communities. With increasing numbers of aircraft taking flight and many airports approaching gridlock, knowledge of airfield operating procedures and characteristics becomes more vital for pilots and aircrews. This pamphlet contains information on locally based aircraft operations, traffic patterns, arrival, and departure routes at Scott/MidAmerica Airport (Scott/MAA). The goal of the 375th Airlift Wing Flight Safety Office (375 AW/SEF) is to provide sufficient information to pilots and aircrew to enable recognition of potential midair collision hazards and help everyone enjoy a safe local flying environment.

MACA was developed in the interest of promoting flying safety. Its primary purpose is to inform pilots and aircrew members of the midair collision potential between military and civilian aircraft transiting Scott/MAA and its airspace.

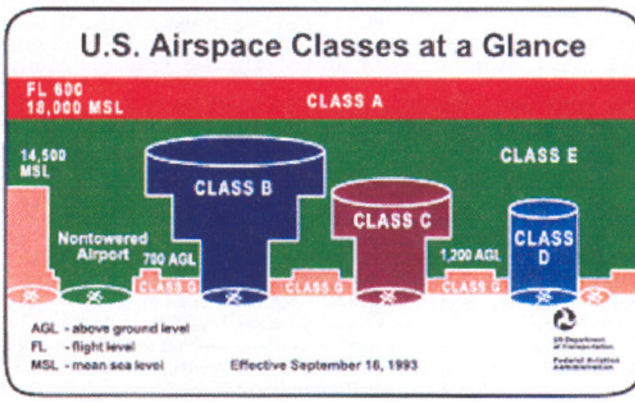
"See and avoid" is the proverb by which all aircrews must adhere regardless of operating IFR or VFR. In the local Scott/MAA airspace large military aircraft tend to be relatively easy to see while smaller civilian aircraft tend to cause more difficulty in accurate visual acquisition. Nonetheless, it is everyone's responsibility to visually scan for traffic at all times. Therefore, all aircraft transiting the Scott/MAA airspace are highly encouraged to use all available aircraft lighting, transponder, and Air Traffic Control (ATC) advisory services to the maximum extent possible.

The 375 AW/SEF is the Office of Primary Responsibility (OPR) for the development, publishing, and maintenance of the Scott AFB Midair Collision Avoidance (MACA) pamphlet. Air Traffic Services is the Office of Collateral Responsibility (OCR) for this pamphlet. If you have any questions concerning any information contained within this pamphlet, contact the 375 AW/SEF at (618) 256-6311 or Air Traffic Control at (618) 256-8787.

375 AW/SEF
861 South Drive, Rm. 300
Scott AFB IL 62225-5335

SCOTT AIRSPACE

Nearly all midair collisions occur within five miles of an airport during the day and in VFR conditions, in controlled airspace, and at lower altitudes (5,000 feet AGL or less). Research indicates that the most critical times for midair collisions are the first three minutes after takeoff and the last eight minutes prior to landing. Most of these accidents involve relatively slow closing speeds, such as aircraft being overtaken or aircraft converging on final approach. The 'Troy Triangle' formed by the Troy VORTAC, Metro East airport, and St Louis Downtown Parks airport is very congested airspace and requires pilot vigilance to operate safely in this area. The Troy VORTAC has several Victor airways crossing over it as well as being an arrival/departure gate for St Louis-Lambert International. SEE AND AVOID are the watchwords throughout this area. Aircraft using Interstate 64, east of St Louis, for navigation will cross within one mile of Scott/MAA and will cross the final approach course for runways 14L and 14R.



Airspace Classes	Former Airspace Equivalents	Changes
A	Positive Control Area (PCA)	None
B	Terminal Control Area (TCA)	VFR: clear of clouds
C	Airport Radar Service Area (ARSA)	None
D	Air Traffic Area (ATA) and Control Zone (CZ)	Upper limits 2,500' AGL
E	General Controlled Airspace	None
G	Uncontrolled Airspace	None

Scott/MAA is located 20 miles east of St. Louis, Missouri along Interstate 64. There are four airports within a 15-mile radius. Included within this pamphlet are several illustrations that provide a graphic description of Scott/MAA's airspace. Notice that Scott/MAA's Class D airspace is located beneath St Louis's Class B airspace. Within this Class B area, VFR operations are prohibited above 4,400' MSL without approval from St Louis Approach.

The Scott/MAA Class D surface area is locally defined as that airspace within a five statute mile radius from the geographic center of Scott/MAA with two additional airspace extensions (see figure). The vertical limits extend from the surface up to and including 3,000' MSL. Before transiting Scott/MAA's Class D airspace below 3,000' MSL, all pilots are required to contact St Louis Approach or the Scott/MAA Control Tower.

Like most Air Force bases, Scott AFB operates 24-hours a day. However, peak flying in the local area occurs between 6 A.M. and 5 P.M. Monday through Friday. During these times, there is moderate aircraft traffic entering, exiting, and remaining within a 12-mile radius of Scott AFB. At other times, traffic is less extensive. On some weekends, the 932nd Airlift Wing (C-9) and the 126th Air Refueling Wing (KC-135E) conduct extensive flying training. The majority of military traffic in the Scott/MAA area consists of DC-9, Lear 35 and KC-135 aircraft. However, all types of military and civilian aircraft use Scott/MAA ranging in size from one of the world's largest aircraft, C-5 Galaxy, to the much smaller civilian Cessna 172.

DEPARTURES:

IFR departures from Scott/MAA are normally via radar vectors or Standard Instrument Departures. The departure routings depicted in this pamphlet are based on no-wind courses and DME mileage corresponds roughly to statute miles. Final level-off altitudes vary from FL 200 to FL 410. Military aircraft speeds range from 200 to 350 KIAS. Aircraft at Scott AFB accomplishing pattern work will depart runway heading, climb and maintain 3,000 feet on Runway 32L/14R (Scott AFB). Climbout instructions for 32R/14L (MidAmerica) is fly heading 040, climb and maintain 3,000 feet. These are considered "local climbout instructions."

ARRIVALS/APPROACHES:

Arrival routing to Scott/MAA is via radar vectors from Class A airspace into the local traffic pattern. The ground tracks vary with active runways and crossing traffic. Inbound aircraft generally enter St Louis Approach's airspace from one of four areas: Farmington (south), Centralia (east), Foristell (west), or Troy (north). *Step down altitudes of 12,000, 7,000 and 3,000 feet are commonly used.* At peak times for St Louis-Lambert arrivals/departures expect significant descent rates from Kansas City Center approaching the St Louis/Scott area. High altitude penetrations are rarely flown. Airspeeds during radar vectored en route descents range from 250 to 330 KIAS. Runways 32L and 32R are designated as the primary instrument and calm runways.

TRAFFIC ADVISORIES:

Traffic advisories are a service provided by ATC which advise pilots of IFR and known VFR traffic in their area. This service in no way relieves pilots and crews of their responsibility to keep themselves clear of other aircraft. *** SEE AND AVOID ***

Information on VFR traffic not in radio contact with ATC or not observed on the radar cannot be issued. All VFR traffic should use traffic advisory service when flying in the St Louis/Scott airspace. Once in radio contact, the ATC agency can obtain information on aircraft position, altitude, and direction of flight. This information is not only used to keep you clear of traffic, but to help keep traffic clear of you. *** SEE AND BE SEEN ***

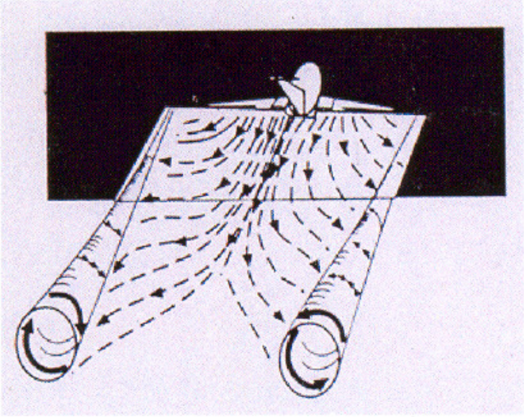
Myth: Many VFR pilots believe if they accept traffic advisories the ATC agency will control their aircraft. Not true! *Traffic advisories are given as a service to help avoid midair collisions.* At most, ATC will **recommend** vectors around the heavy traffic areas. Therefore it is to your benefit, and the benefit of other pilots, that you participate in the ATC system.

St Louis Approach can provide VFR traffic advisories within their area of control. However, remember that traffic advisories are given on a workload permitting basis. To receive service, simply establish contact with St Louis Approach (125.2) and wait for a reply. After the controller acknowledges you, give your position with respect to an airport or NAVAID, altitude, and destination. The controller will identify your aircraft through the use of the transponder (if you are equipped), use of turns, or position relative to a fix or NAVAID. St Louis Approach will issue traffic along your route of flight.

Occasionally, traffic volume and controller workload may preclude aircraft from receiving traffic advisories. The controller will issue the current altimeter setting and instructions to maintain VFR. In this case, it's an excellent idea to continue monitoring the frequency to get an idea of the location of the traffic under St Louis Approach's control. *The bottom line – it is important to be on the lookout for traffic at all times, whether or not you're receiving traffic advisories!*

Prior to entering or transitioning the Scott/MAA Class D airspace, every VFR aircraft must establish two-way radio communication with Scott/MAA Tower (128.25 or 118.65) and obtain approval to enter the airspace. Traffic advisories are normally issued for inbound and departing traffic.

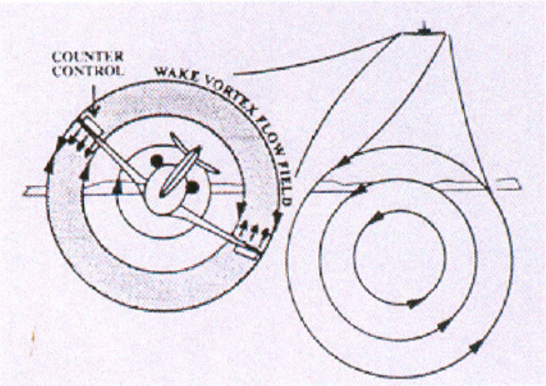
WAKE TURBULENCE



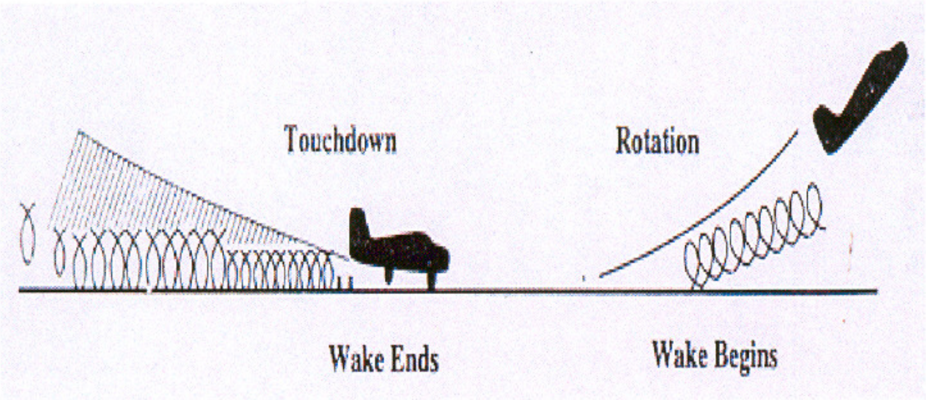
The United States averages approximately one mishap per month and one fatality annually due to wingtip vortices. All pilots flying in the vicinity of large, heavy aircraft should exercise extreme caution and ensure 6 to 10 minutes (4 to 6 miles) of separation depending on type of aircraft and atmospheric conditions. All aircraft generate wake turbulence anytime the wings are producing lift. Wake turbulence is a pair of counter-rotating vortices trailing from the wing tips.

As aircraft became larger and heavier, the intensity of the vortices began to pose problems for smaller aircraft. Some of today's jet aircraft, particularly the new (civil and military) jumbo jets, generate vortices with roll velocities exceeding the roll control capability of some aircraft.

Furthermore, turbulence generated within the vortex core can damage aircraft components and equipment if encountered at close range. Pilots must learn to envision the location of the aircraft vortex wake and adjust flight path accordingly.

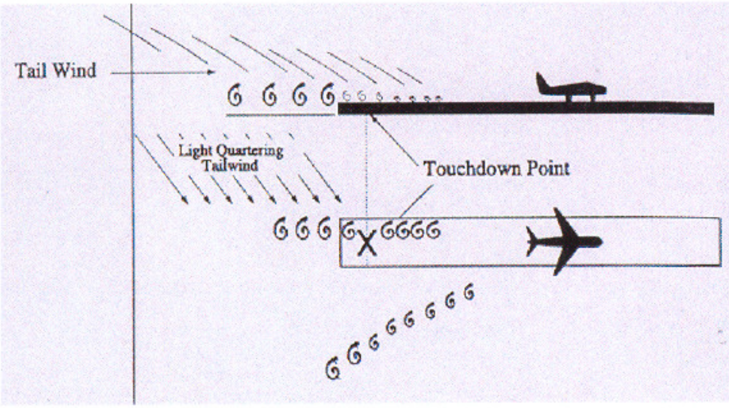


The weight, speed, and shape of the wing of the generating aircraft determines the strength of the vortex. Tests have revealed that vortices can reach velocities exceeding 150 feet per second, or about 90 knots. The greatest vortex strength occurs when the generating aircraft is heavy, clean, and slow. Unfortunately, these worst case conditions occur at low altitudes leaving little altitude for recovery, thus encounters with this phenomenon are often tragic. Serious wake turbulence encounters can result in structural damage or loss of control due to imposed rolling moments exceeding the roll control authority of your aircraft.



Trailing vortex wakes have certain characteristics that a pilot can use to visualize and avoid them. Vortex generation starts when the nose wheel lifts off the runway and ends when the nose wheel touches down on landing.

Pilots should always plan to land beyond the touchdown point, and rotate prior to the rotation point, of the preceding aircraft if wake turbulence is suspected.



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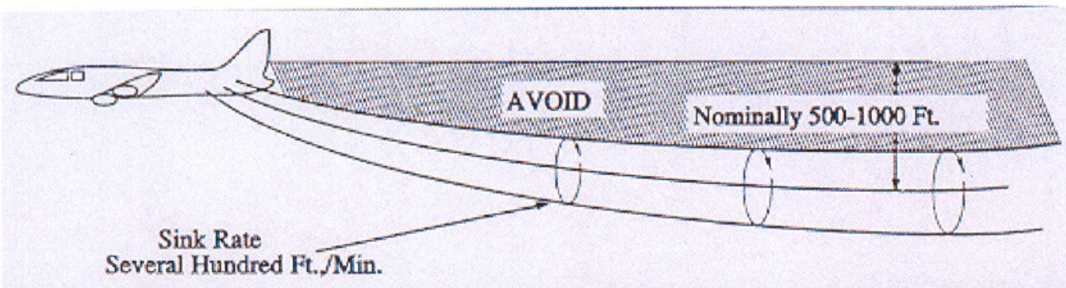
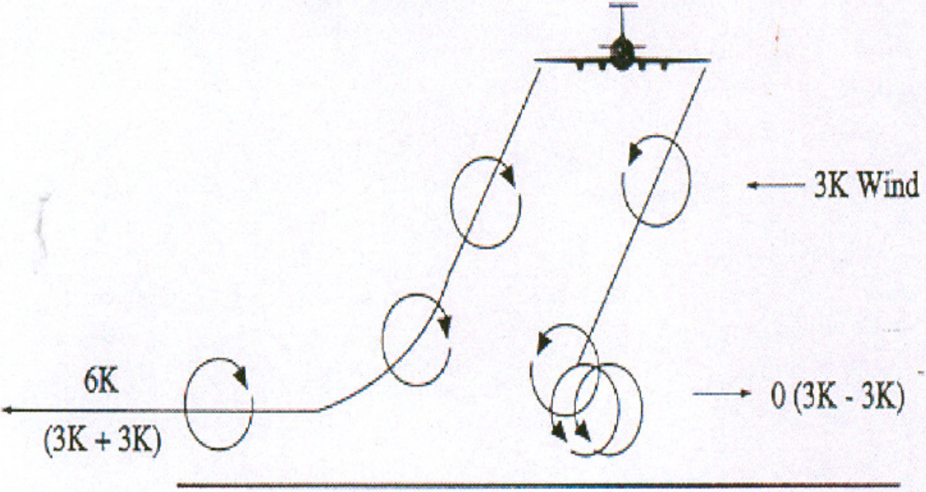


Avoid encounters below and behind the generating aircraft, especially at low altitude where a momentary wake encounter could be hazardous. If a heavy jet is observed above you on the same track (same or opposite direction) adjust your position laterally; preferably upwind.

Flight tests have shown vortices from heavy jets start to sink immediately at about 400 to 500 feet per minute. They tend to level off about 800 to 900 feet below the heavy jet's flight path. Vortex strength diminishes with time and distance behind the generating aircraft. Atmospheric turbulence encourages wake turbulence dissipation. However, residual chop often remains after vortex breakup extending as much as 10 miles behind a heavy aircraft flying at slow to moderate speed.

When vortices sink into ground effect, they tend to move outward over the ground at approximately 5 knots. A crosswind component will decrease the lateral movement of the upwind vortex and increase the movement of the downwind vortex. This may result in the upwind vortex remaining in the touchdown zone and push the downwind vortex toward a parallel runway. Similarly, a tail wind can move vortices of a previous aircraft forward into the touchdown zone.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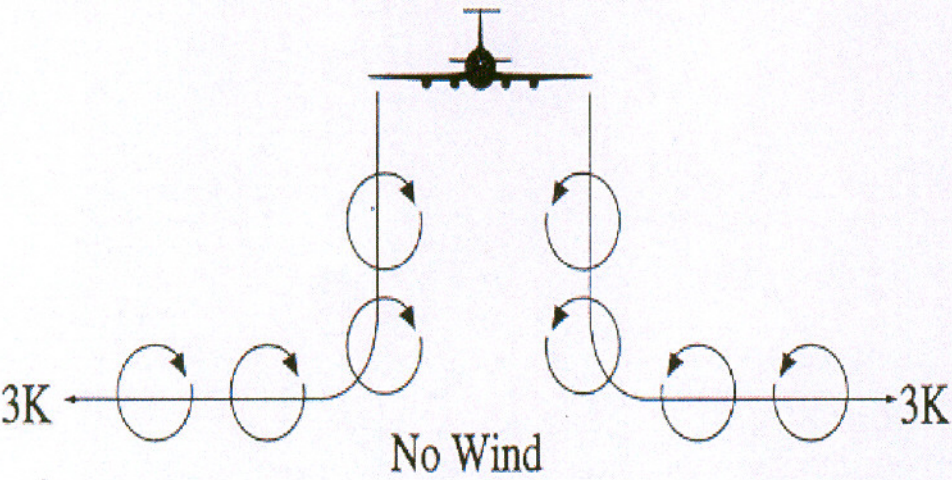
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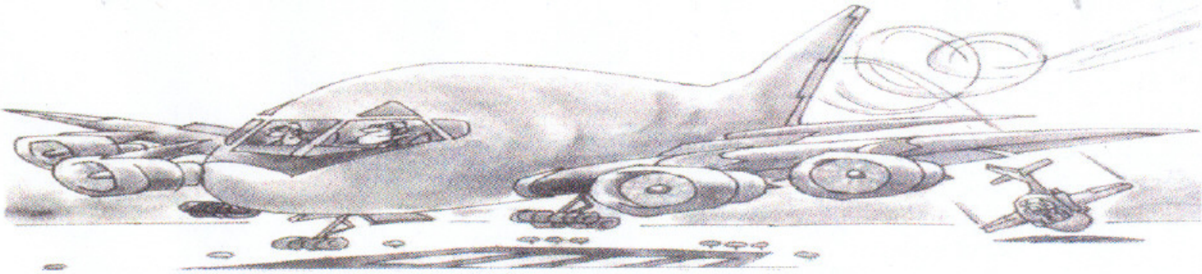
WAKE TURBULENCE

Aircraft operating within Scott's airspace should use **extreme caution.** Wake turbulence is an unpredictable phenomenon and its existence cannot be anticipated. It can be encountered by airbourne aircraft as well as on the ground.



Their wake, your funeral.

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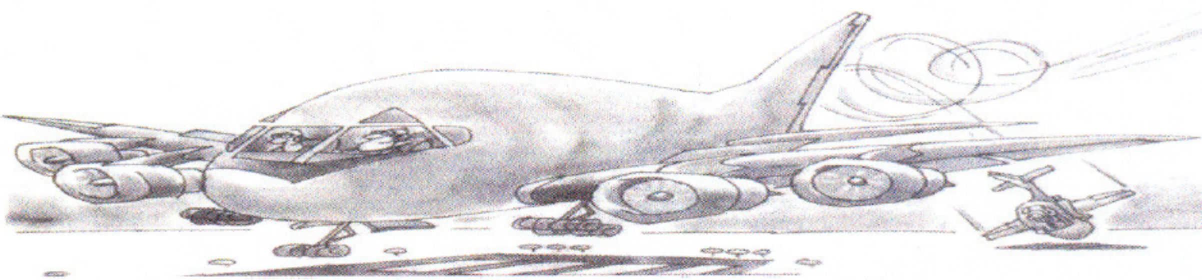


Their wake, your funeral.

WAKE

PROFILE OF A MIDAIR

During a three year study of midair collisions involving civilian aircraft, the National Transportation Safety Board (NTSB) determined that:

1) The occupants of most midairs were on a pleasure flight with no flight plan filed.
2) Nearly all midair collisions occurred in VFR conditions during weekend daylight hours.
3) The majority of midairs were the result of faster aircraft overtaking and hitting a slower aircraft.

4) No pilot is immune. Experience levels in the study ranged from initial solo to the 15,000 hour veteran.
5) The vast majority of midairs occurred at uncontrolled airports below 3,000 feet.
6) Enroute midairs occurred below 8,000 feet and within 25 miles of the airport.
7) Flight instructors were onboard one of the aircraft in 37% of the midairs.

CAUSES OF MIDAIR COLLISIONS:

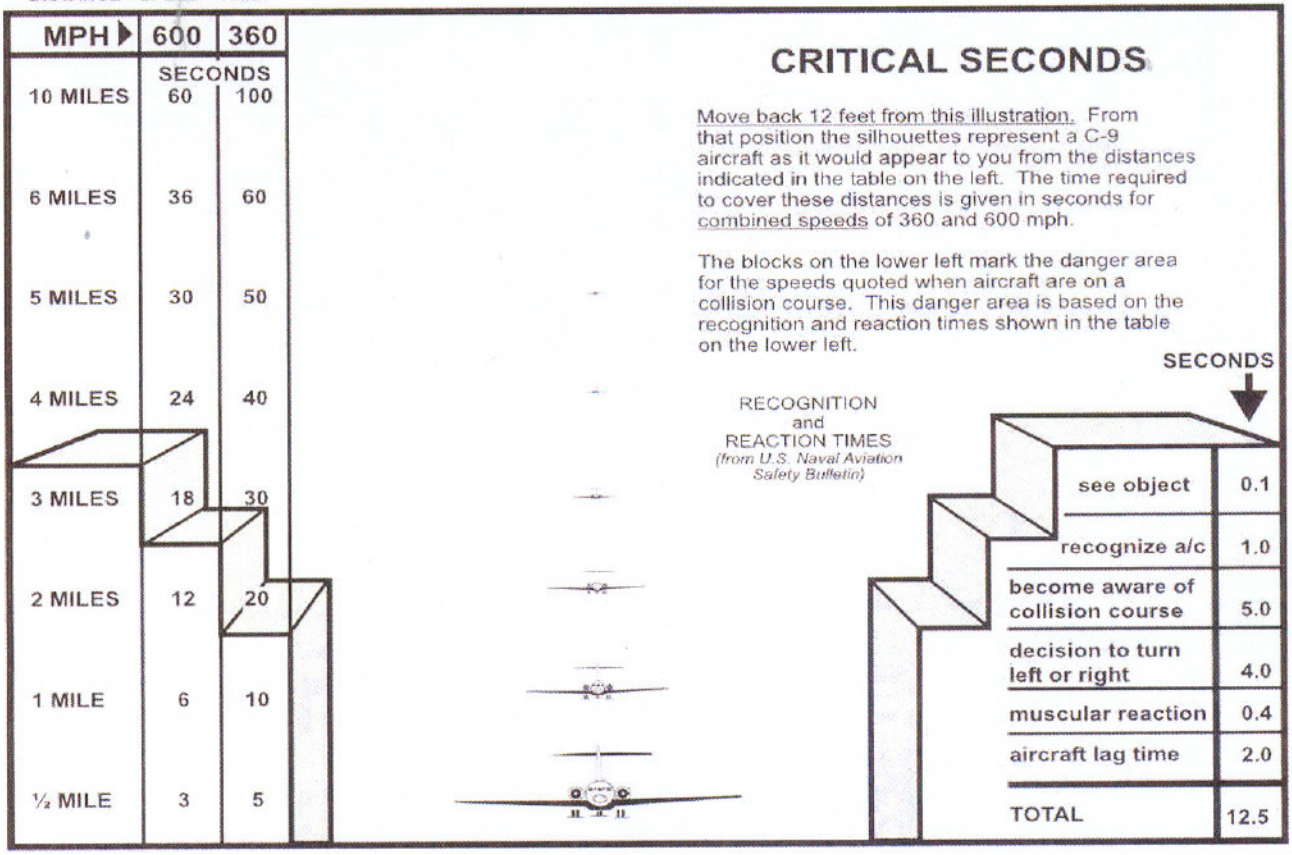
A near midair collision (NMAC) is defined as an incident associated with the operation of an aircraft where a possibility of collision occurs as a result of less than 500 feet separation from another aircraft. In addition, a report received from a pilot or flight crew member stating that a collision hazard existed between two or more aircraft is also classified as a near midair collision. It is the responsibility of the pilot and/or flight crew to determine whether a near midair collision did actually occur and, if so, to initiate a NMAC report. Be specific, as ATC will not interpret a casual remark to mean a NMAC is being reported. The pilot should state, "I wish to report a near midair collision."

What causes in-flight collisions? Undoubtedly, increasing traffic and higher closing speeds are prime contenders. These problems are heightened by the fact that ATC and many radar facilities are often overloaded and limited. For instance, a jet and a light twin have a closing speed of about 750 mph. For a pilot **unaware** of traffic, it takes approximately 10 to 12 seconds to spot the traffic, identify it, realize it's a collision threat, react, and have the aircraft respond. But two aircraft converging at 750 mph may be less than 12 seconds apart when the pilots are first able to detect each other! Thus, simple math tells us that it is imperative for pilots and aircrews to engage in diligent clearing procedures to identify potentially hazardous threats.

The reason most often noted in midair accident statistics is "failure of pilot to see other aircraft". In most cases, one of the pilots involved could have seen the other aircraft in time to avoid contact by using proper scanning techniques. So it's really that complex, vulnerable little organ - the human eye - which is the leading cause of in-flight collisions.

Take a look at how the eye's limitations affect your flight:

DISTANCE - SPEED - TIME



LIMITATIONS OF THE EYE:

The eye, and consequently vision, is vulnerable to just about everything: dust; fatigue; emotion; germs; fallen eyelashes; age; optical illusions; and the alcoholic content of last night's party. In flight our vision is altered by atmospheric conditions, windshield distortion, too much oxygen or too little, acceleration, glare, heat, lighting, and aircraft design among other things.

Most of all, the eye is vulnerable to the 'wandering' of the mind. We can 'see' and identify only what the mind allows us to see. For instance, a daydreaming pilot staring out into space sees no approaching traffic and is probably the #1 candidate for an in-flight collision.

One function of the eye that is a source of constant problems to the pilot is the time required for **accommodation**. Our eyes automatically refocus and accommodate on near and far objects. But the change from something up close, like a dark panel two feet away, to a well-lighted landmark or aircraft target a mile or so away, takes 1 to 2 seconds, or longer, for eye accommodation. That can be a long time when you consider the 10 seconds needed to avoid in-flight collisions.

Another focusing problem usually occurs at very high altitudes, but can also occur at lower levels, on vague colorless days above a haze or cloud layer when no distinct horizon is visible. If there is little or nothing to focus on, the eyes tend to not focus at all. We experience something known as **empty-field myopia**; we stare, but see nothing, including opposing traffic within our visual field.

The National Transportation Safety Board (NTSB) has seriously studied the effects of what is called 'binocular vision' during investigations of in-flight collisions. To actually accept what we see, we need to receive cues from both eyes. If an object is visible to one eye, but hidden from the other by a windshield post or other obstruction, the total image is blurred and is not always acceptable to the mind.

Another inherent eye problem is its narrow field of vision. Although our eyes can quickly observe an approximate arc of nearly 200°, only a very small center area (approximately 10° to 15°) called the fovea, in the rear of the eye, has the ability to send clear, sharply focused messages to the brain. The rest of the visual information is processed with much less detail. Although the eye senses movement using peripheral vision, the eye cannot accurately identify what is happening in the distance, thus pilots tend to not believe what is seen out of the corner of their eyes. This phenomenon must be addressed to avoid tunnel vision. This limitation is compounded by the fact that a distant aircraft on a collision course will appear small and motionless. It will remain this way for a relatively long time, then suddenly 'blooming' into a huge mass filling your windows. This is called the **blossom effect**. Since we need motion or contrast to attract our eyes' attention, it's disconcerting to imagine that a large bug smear or dirty spot on the windshield can actually hide a converging plane until it is too close to be avoided. The eye can also create perceptional optical illusions, which all pilots have likely experienced. For example, an aircraft flying below your altitude appears to be above your altitude. As it nears, it will seem to descend and go through your altitude, yet all the while it will be straight and level below you. In-flight collisions have actually occurred when pilots experienced this illusion and the higher flying airplane dove directly into the path of the aircraft flying below.

The eye is also severely limited by the environment. Optical properties of the atmosphere alter the appearance of traffic, particularly on hazy days. Limited visibility actually means limited vision. You may be legally VFR when you have three miles, but at that distance on a hazy day, opposing traffic is not easily detected. At ranges closer than three miles, an airplane on a collision course may not be avoidable.

Lighting also significantly affects our vision. Glare, usually worse on a sunny day, over a cloud deck, or during flight directly into the sun, makes objects difficult to see and scanning uncomfortable. Also, an object that is well lighted will have a high degree of contrast and will be easy to detect, while one with low contrast at the same distance may be nearly impossible to see. For example, when the sun is behind you, an opposing aircraft will stand out clearly, but when you're looking into the sun and your traffic is backlighted, it's a very different story.

Another contrast problem area is trying to find an airplane amongst a cluttered background. If it is between you and terrain that is varicolored or heavily dotted with buildings, it will blend into the background until it is quite close.

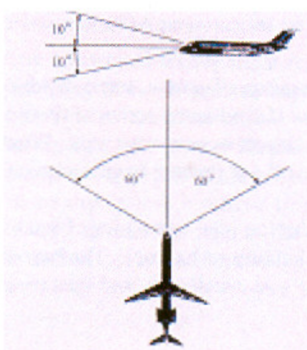
And, of course, there are the instruments, which can distract us to the point of not seeing anything at all, or lull us into cockpit myopia - staring at one instrument without focusing. How often have you filed IFR on a VFR day, settled back at your assigned altitude with the autopilot on, and then never looked outside, feeling secure that radar advisory service would protect you from all harm? Don't you believe it! Remember, our radar system has its limitations too! It's fine to depend on instruments, but not to the exclusion of the 'see-and-avoid' concepts, especially on days when there are pilots, not under radar surveillance or control, flying around in the same sky. Don't forget - our ATC system is definitely fallible, even when it comes to providing radar separation between aircraft flying on IFR flight plans.

It is clear that visual perception is affected by many factors. Pilots, like everyone else, tend to overestimate their visual abilities and to misunderstand their eyes' limitations. The primary cause of in-flight collisions is the failure to 'see-and-avoid'. Pilots and aircrews must incorporate an efficient external scan to ensure visual accommodation. Your life just may depend on it someday.

SCANNING

So, you want to know how to develop the perfect scan? Well there is no perfect solution, or at least there is no one scan technique that is best for all pilots. It is, however, critical for all pilots to develop a scan that is efficient, routine, and comfortable. Begin by losing bad habits. Naturally, not scanning at all is the poorest technique, but glancing out at 5-minute intervals isn't a whole lot better when you consider that it only takes seconds for a disaster to happen. Note your scanning technique the next time you're climbing out, making an approach, or just bouncing along over a long cross-country route. See how long you go without looking out the window.

Learn to scan properly by knowing where to concentrate your search. Though not practical, it would be preferable to look everywhere constantly. Instead, concentrate on the areas most critical to you at any given time. In the traffic pattern, clear before executing all turns, and always watch for traffic making an improper pattern entry. During descent and climbout, make gentle S-turns to see if anyone is a potential conflict. Make clearing turns before attempting maneuvers such as pylons and S-turns about a road. During that very critical final approach stage, don't forget to look behind and below, at least once; and avoid tunnel vision. Pilots often rivet their eyes to the point of touchdown at the exclusion of all else.

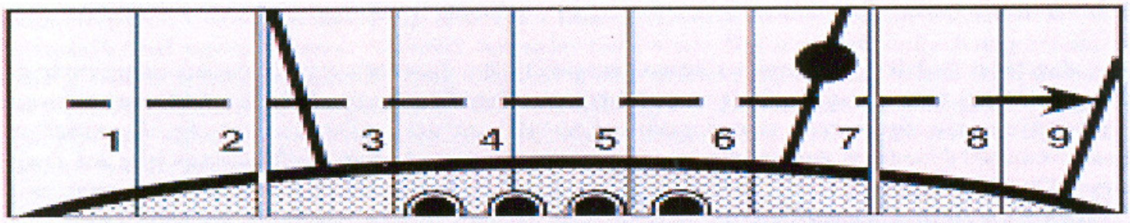


In normal flight, pilots can generally avoid the threat of a midair collision by scanning an area 60° to the left and right of your center visual area. This doesn't mean one should forget the rest of the windscreen area. Occasional scanning out the side windows should offer sufficient safety. Horizontally, the statisticians say, you will be safe if you scan 10° up and down from your flight vector. This will allow pilots to spot any aircraft that is at an altitude that might prove hazardous to your own flight path, whether it's level with your aircraft, below and climbing, or above and descending. Remember, the slower your plane, the greater your vulnerability; hence, the greater scan area required.

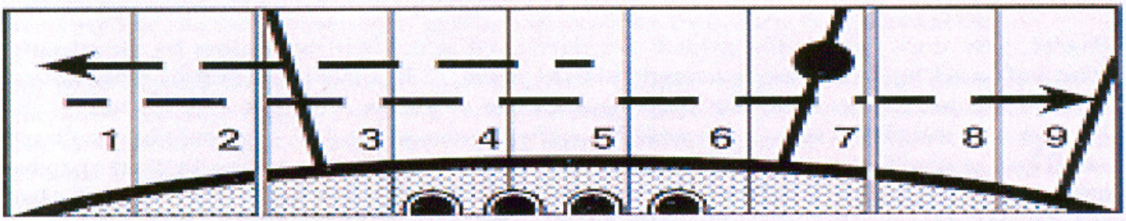
SCAN PATTERNS:

The best defense against midair collisions is an efficient, routine scan pattern. Two basic scans have proved effective for most pilots and comprise the **block system**. This type of scan is based on the theory that traffic detection can be made only through a series of eye fixations at different points in space. Each of these fixes becomes the focal point of your field of vision (a block 10° to 15° wide). By fixating every 10° to 15°, you should be able to detect any contrasting or moving object in each block. This gives you 9 to 12 blocks in your scan area, each requiring a minimum of 1 to 2 seconds for accommodation and detection.

One method of block scan is the **side-to-side** motion. Start at the far left of your visual area and make a methodical sweep to the right, pausing in each block to focus. At the end of the scan, return to the panel. The second form is the **front-to-side** version. Start with a fixation in the center block of your visual field. Move your eyes to the left, focusing in each block, swing quickly back to the center block, and repeat performance to the right, then scan the panel.



Side-to -Side scanning method. Start at the far left of your visual area and make a methodical sweep to the right, pausing in each block of viewing area to focus your eyes. At the end of the scan, return to the panel.



Front-to-Side scanning method. Start in the center block of your visual field (center of front windshield); move to the left, focusing in each block, then swing quickly to the center block after reaching the last block on the left and repeat the performance to the right.

There are other methods of scanning, of course, some of which may be as effective for you as the two preceding types. Nonetheless, until some series of eye fixations are made, there is little chance of detecting all the targets in your scan area. Missing just one might prove hazardous. Remember, when the head is in motion, vision is blurred and the mind will not register targets as effectively.

Developing an efficient time-sharing plan takes a lot of work and practice, but it is just as important as developing good landing techniques. The best way is to start on the ground, in your own airplane or the one you usually fly, and then practice your scan during every flight.

COLLISION AVOIDANCE CHECKLIST

Have you ever gotten out of a plane with your hands sweaty and body shaking because someone nearly made you a statistic? If so, you are not alone. As aviation activity increases throughout America, the possibility of being party to a near midair or an actual collision increases. The FAA has instituted several policies to alleviate the midair collision potential, but the ultimate responsibility lies with you, the pilot. Collision avoidance begins with learning proper scanning techniques. A pilot can be the most conscientious scanner in the world and still have a midair collision if he/she neglects other important factors in the overall 'see-and-avoid' picture. A Collision Avoidance Checklist can help in mission planning prior to flight.

Check yourself

Start with a check of your own condition. Your eyesight, and consequently your safety, depends on your mental and physical condition.

Plan ahead

Plan your flight ahead of time. Have charts folded in proper sequence and within easy reach. Keep your cockpit free of clutter. Be familiar with headings, frequencies, distances, etc., ahead of time, so you spend minimum time with your head down in your charts. Some pilots even jot important information down on a flight log before takeoff. Check your charts and NOTAMS in advance, and avoid restricted areas, military cross-country training routes, intensive student jet training areas, and other high-density spots if possible.

Clean windows

During the walk-around inspection, make sure your windshield is clean. If possible, keep all windows clear of obstructions, like solid sun visors and curtains.

Adhere to S.O.P.'s

Standard Operating Procedures (SOPs) have been established over time as the best way to fly your aircraft. Follow them! Additionally, flight regulations, such as correct altitudes and proper pattern practices can lessen your exposure to hazards. Avoid 'sneaking' out of your proper altitude as cumulous clouds begin to build higher and higher below you, or by skimming along the tops of clouds without proper cloud clearance. Some typical situations involving in-flight mishaps around airports include: entering a right-hand pattern at an airport

with left-hand traffic or entering downwind so far ahead of the traffic pattern that you interfere with traffic taking off and heading out in your direction.
Investigations prove that in most midair collisions, at least one of the pilots involved was not where he was supposed to be.

Avoid crowds

Avoid crowded airspace enroute, such as directly over a VOR. On VFR days, you can navigate just as accurately by passing slightly to the left or right of the stations. Pass over airports at a safe altitude, being particularly careful within a 25-mile radius of military airports and busy civil fields. Military airports usually have a very high concentration of fast jet traffic and a pattern extending to 2,500' above the surface. Jets climbing out may be going as fast as 500 mph.

Compensate for design

Compensate for your aircraft's design limitations. All aircraft have blind spots. For example, a high-wing aircraft blocks the area into which you are turning. A low wing blocks the area beneath you. One of the most critical collision situations is a faster low-wing airplane overtaking and descending onto a high-wing aircraft while on final approach. Moreover, check behind you since the majority of midairs occur with one aircraft overtaking another.

Equip for safety

Certain equipment that was once priced high above the light airplane owner's reach is now available at reasonable cost. High-intensity strobe lights increase your contrast by as much as 10 times day or night and are inexpensive to install. Use your strobes and your rotating beacon constantly, even during daylight hours. The cost is pennies per hour - a small price to pay when one considers the possible consequences. Using your landing lights in the pattern day and night also increases your chances of being seen. Transponders significantly increase your safety by allowing radar controllers to keep traffic away from you and vice versa. Now mandatory for flight in many areas, transponders also increase your chances of receiving radar traffic advisories, even on VFR flights.

Talk and listen

Use your radios, as well as your eyes. When approaching an airport, whether you're planning on landing or not, call when 15 miles out and announce your position, altitude, and intentions. Determine the local traffic situation. At an airport with radar service, call Approach Control and tell them where you are and what you are attempting to do. At uncontrolled fields, call Airport Traffic Advisory Service on 123.6 MHz, or other FSS frequency, or on the appropriate Unicom or Tower frequency. Because detecting a tiny aircraft at a distance is not easy, use any hints you get over the radio. A pilot reporting his position to a tower is also reporting to you. Your job is much easier when ATC tells you traffic is "three miles at one o'clock." Once you acquire traffic don't relax and disregard the rest of the sky. If traffic seems to be moving in your windscreen, you're not on a collision course, but continue your scan and check back on the traffic from time to time. If there isn't any relative movement, watch it very carefully, and prepare for possible avoidance procedures, if necessary.

Scan!

The most important part of your checklist, of course, is to always look where you're going and where you want to go. Scan constantly. Never let your guard down!

A WORD ABOUT PASSENGERS:

Although passengers frequently are not pilots, they can greatly assist you in your responsibility to 'see-and-avoid'. Take a few moments to brief your passengers on the importance of detecting traffic and acquaint them with the rudimentary elements of scanning. Explain how to relate traffic position with respect to the clock and encourage them to report all the traffic they see. This will invariably result in a few 'false alarms' but the possibility of a passenger detecting a threat before you do is worth the inconvenience. After all, most passengers will enjoy the flight even more if they can actively participate in the experience.

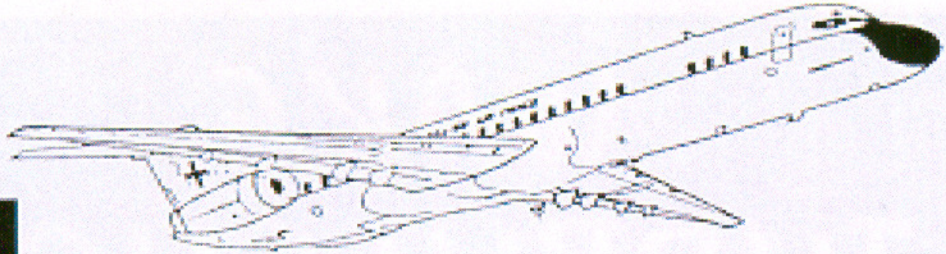
NOTES

BIRD WATCH CONDITIONS

BIRD WATCH CONDITION SEVERE: High bird population (more than 15 large birds such as waterfowl, raptors, gulls, etc. or 30 small birds such as terns, swallows, etc.) on or immediately above the active runway or other specific locations (taxiways, in-field areas, departure or arrival routes, etc.) that represent a high potential for strike. Increased vigilance by all tasked organizations, supervisors, and aircrews is required.

BIRD WATCH CONDITION MODERATE: Increased bird population (5 to 15 large birds or 15 to 30 small birds) in locations that represent an increased potential for strike. Increased vigilance by all tasked organizations, supervisors, and aircrews is required.

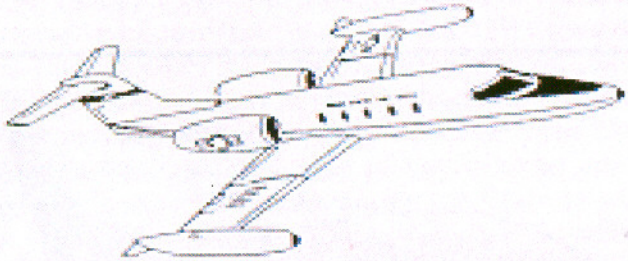
BIRD WATCH CONIDTION LOW: Normal bird activity (fewer than 5 large birds or fewer than 15 small birds) on or above the airfield with a low probability of hazard.



DC-9

DC-9 Nightingale is the military version of the McDonnell Douglas DC-9
Climbs: 2,000 FPM
Final Approach Speed: 115-130 KIAS

Dimensions:	Wing Span	93'3"
	Length	119'3"
	Height	27'6"

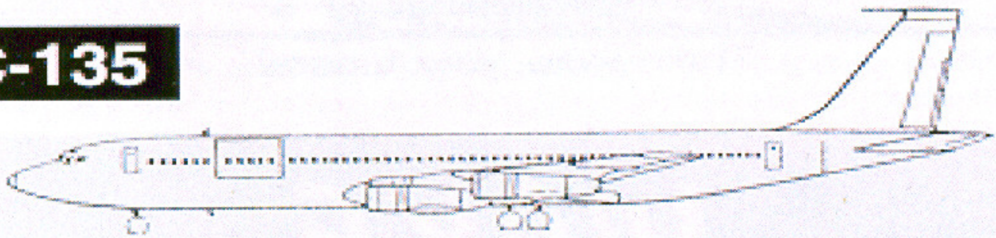


LJ-35

LJ-35 is the military version of the Gates Learjet Lear 35
Climbs: 3,500 FPM
Final Approach Speed: 115-130 KIAS

Dimensions:	Wing Span	39'6"
	Length	48'8"
	Height	12'4"

KC-135



KC-135 is the military version of the Boeing 707
Climbs: 2,000 FPM
Final Approach Speed: 145 KIAS

Dimensions:	Wing Span	130'10"
	Length	136'3"
	Height	41'8"

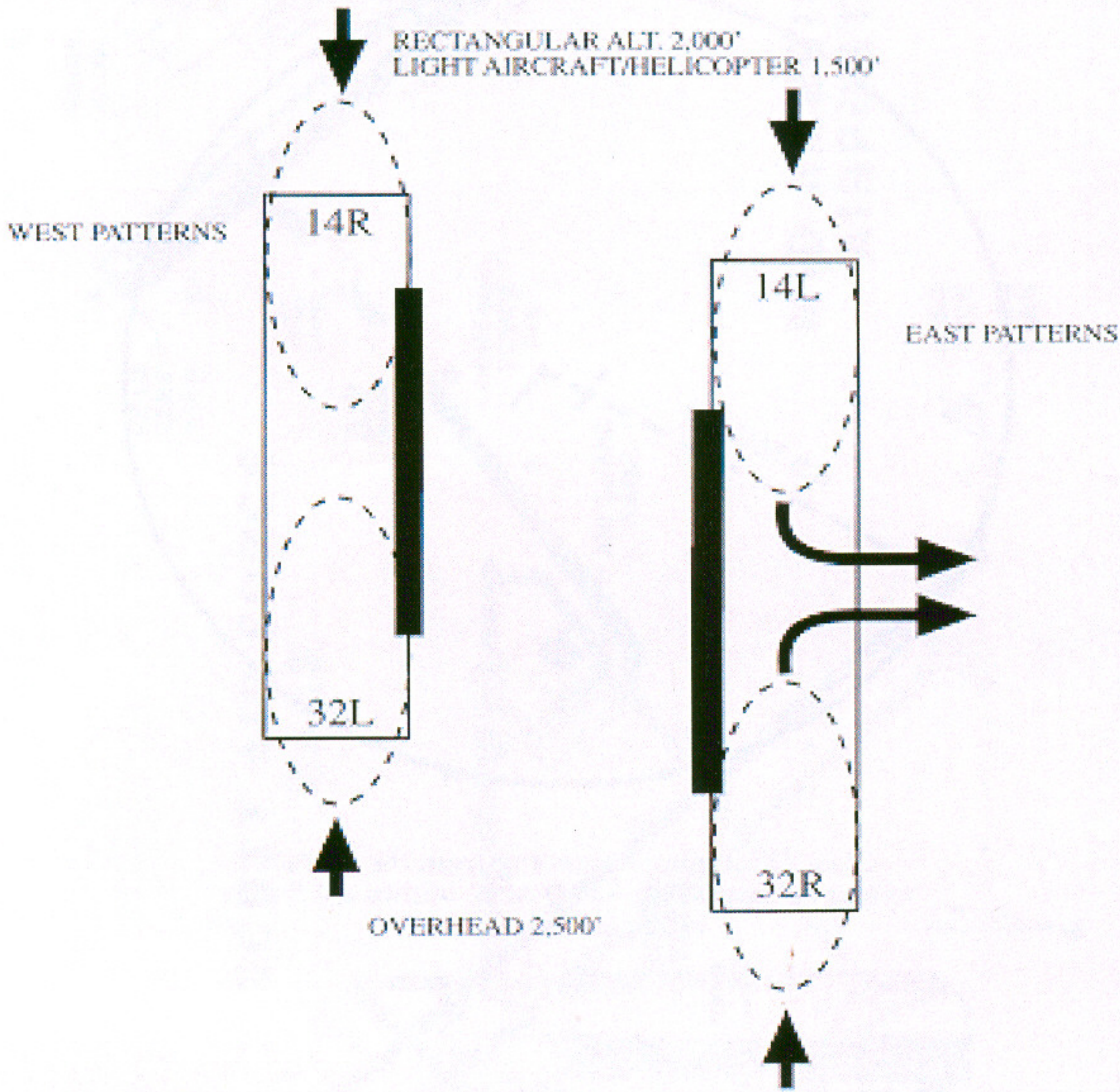
CESSNA 172

Wingspan: 36 ft 1 in
Length: 27 ft 2 in
Max Takeoff Wt: 2450 lbs
Max Cruise Speed: 123 kts
Approach Speed: 65 kts

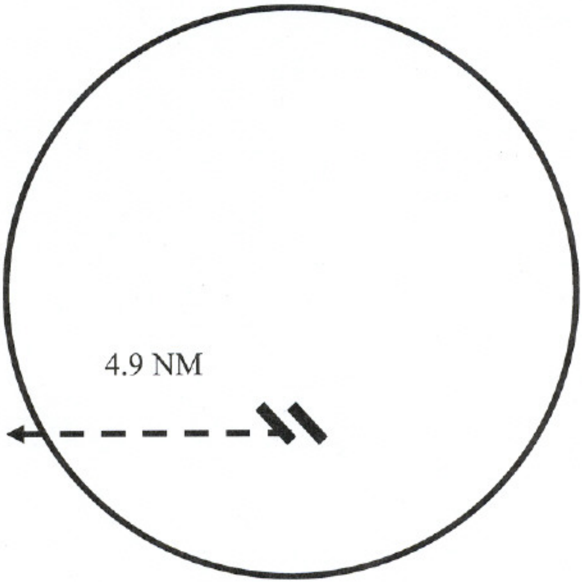
PIPER SEMINOLE

Wingspan: 38.6 ft
Length: 27.6 ft
Max Takeoff Wt: 3800 lbs
Max Cruise Speed: 168 kts
Approach Speed: 90 KTS

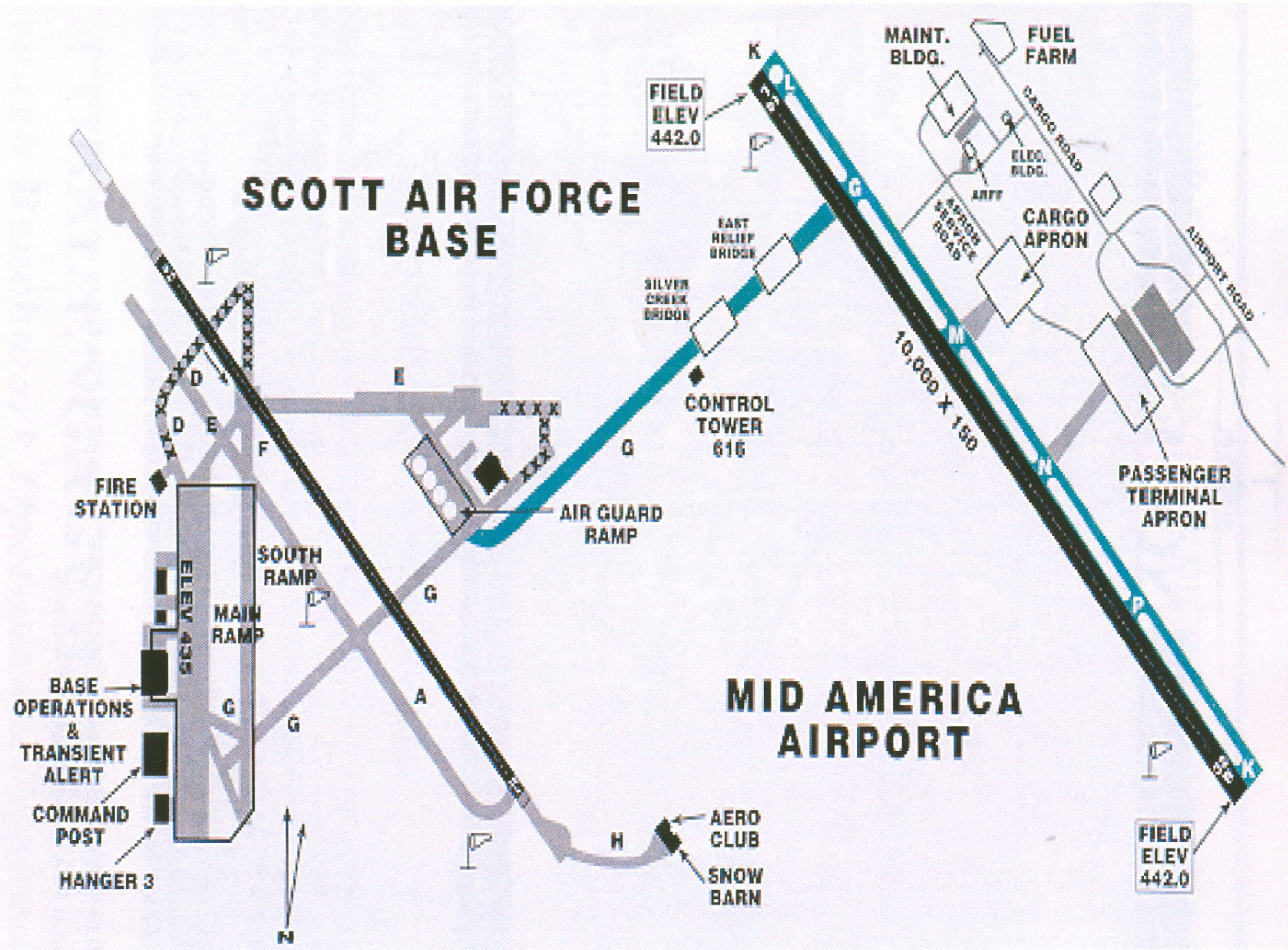
SCOTT AFB/MID AMERICA
VFR TRAFFIC PATTERN



SCOTT AFB/MIDAMERICA
CLASS "D" AIRSPACE



Class D Airspace extending from the surface to and including 3,000 MSL within a 4.9 mile radius of the airport



SCOTT AIR FORCE BASE
MID AMERICA AIRPORT
FIELD ELEV 442.0
K
L
G
M
N
P
K
MAINT. BLDG.
FUEL FARM
CARGO ROAD
ELEC. BLDG.
ARFF
APRON SERVICE ROAD
CARGO APRON
AIRPORT ROAD
EAST RELIEF BRIDGE
SILVER CREEK BRIDGE
CONTROL TOWER 616
10,000 X 150
PASSENGER TERMINAL APRON
FIELD ELEV 442.0
E
D
D
E
F
G
XXXX
FIRE STATION
AIR GUARD RAMP
SOUTH RAMP
G
ELEV 435
MAIN RAMP
BASE OPERATIONS & TRANSIENT ALERT
G
G
A
COMMAND POST
HANGER 3
H
AERO CLUB
SNOW BARN
N

NOT FOR NAVIGATIONAL USE

NOT FOR IN-FLIGHT USE—FOR INFORMATION ONLY
SCOTT AFB/MIDAMERICA AIRPORT

RUNWAYS:

Runway	14L/32R	14R/32L
Length:	10,000	8,001
Width:	150'	150'

FIELD LIGHTING:

Rotating Beacon (1 green -2 white flashes)
High Intensity Runway Lights
Sequenced Flashing Lights
Precision Approach Path Indicator (PAPI)

NAVAIDS:

TACAN:		SKE	Ch 59
ILS:	14R/32L	I-BLV	109.9
ILS:	14L/32R	I-BTC	111.15
NDB:	Belleville	BL	362 KHz
	Gooey	JD	385 KHz
GPS:	14L/32R		

TRAFFIC PATTERNS:

Runway 32	Left Traffic
Runway 14	Right Traffic
Radar Pattern	2,000 MSL
VFR Pattern	2,000 MSL
Overhead Pattern	2,500 MSL
Light Aircraft/Helo	1,300 MSL

RADIO FREQUENCIES:

Scott ATIS	128.7	256.4
Scott Ground	119.2	275.8
MAA Ground	119.875	263.025
Scott (West) Tower	128.25	253.5
MAA (East) Tower	118.65	251.075
St Louis Approach	125.2	281.5
Scott METRO (WX)		239.8
Pilot to Dispatch		372.2
Scott Command Post	130.65	383.2
126 ARW Command Post	141.7	277.7

LOCAL MILITARY AIRCRAFT CHARACTERISTICS:

ACFT	CLIMB/DESCENT	FINAL APPROACH	RADAR PATTERN
C-9	3,000 FPM	120 KIAS	200 KIAS
C-21	3,000 FPM	150 KIAS	200 KIAS
KC-135E	3,000 FPM	150 KIAS	200 KIAS